Service Oriented Architecture for Advanced Training System Application Integration

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Abstract

NMCI hosts a multitude of information systems and business processes to manage and support all aspects of training for the Navy, from scheduling recruit training, through classroom scheduling and resource allocation, to Accessions and Fleet Readiness assessment. All too often, such applications were built as point solutions to satisfy highly specific training management requirements without much regard for system interoperability among different training areas and agendas.

Various training organizations in the Navy have banded together to collaborate on methods to integrate training management applications and consolidate disparate authoritative data sources in the vast Navy information repositories. In this presentation, we describe the use of a Service Oriented Architecture (SOA) model for application integration among such different isolated and federated training management systems. In particular, we look at the role the NMCI infrastructure can play in supporting data consolidation and application integration initiatives based on recasting applications to SOA both for application migration as well as new application development.

The move to SOA holds much promise for unifying business processes through the general and diverse use of Web Services, to accelerate migration projects, lower implementation costs, and increase levels of automation among training management system functions. This advantageous approach to data and application consolidation,

however, if not carried out with significant planning and analysis at the outset, can bring concomitant risks in lowering data quality, increasing data integrity problems, and potentially increasing migration and maintenance costs long term. We show how a phased data and application integration approach to progressive SOA development can help mitigate such risks. We focus on:

- establishing the most effective technology for deploying applications based on a SOA
- ensuring data quality and data integrity when deploying Web Services for both data integration and application integration
- addressing detailed performance and security constraints associated with SOA in an intranet environment such as NMCI

We describe the benefits and risks of SOA-based application integration with examples of actual system development and application migration conducted under the auspices of various Navy training systems development projects. Finally, we discuss potential benefits of employing an SOA approach, particularly as concerns reliance on and effective integration with the NMCI infrastructure, as more and more such applications are fielded throughout the Navy's training organizations.

About ISERA

The ISERA Group researches, designs, develops, and integrates advanced decision-support technology systems to manage and optimize complex scheduling requirements for government and commercial customers around the world. ISERA's products range from integrated planning, scheduling, and operational support applications for advanced training systems in all branches of the military to off-the-shelf software for emergency crew scheduling and deployment.

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